Investigate momentum/dca reconstruction MAPS + TPC

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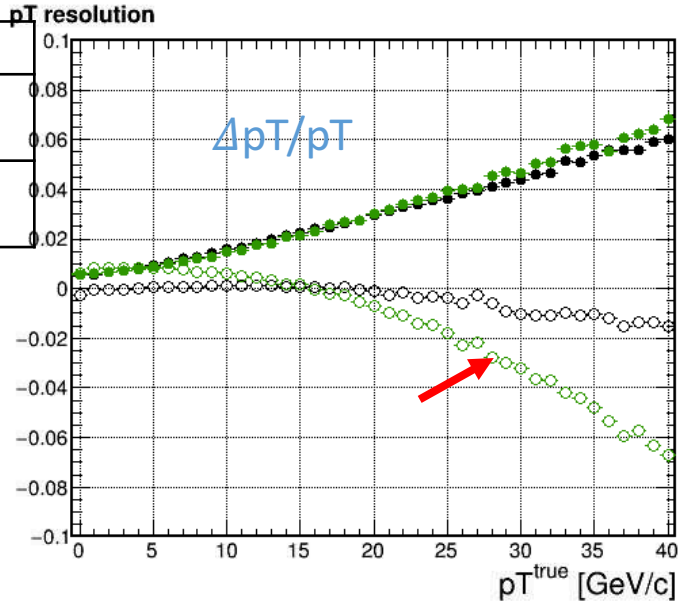
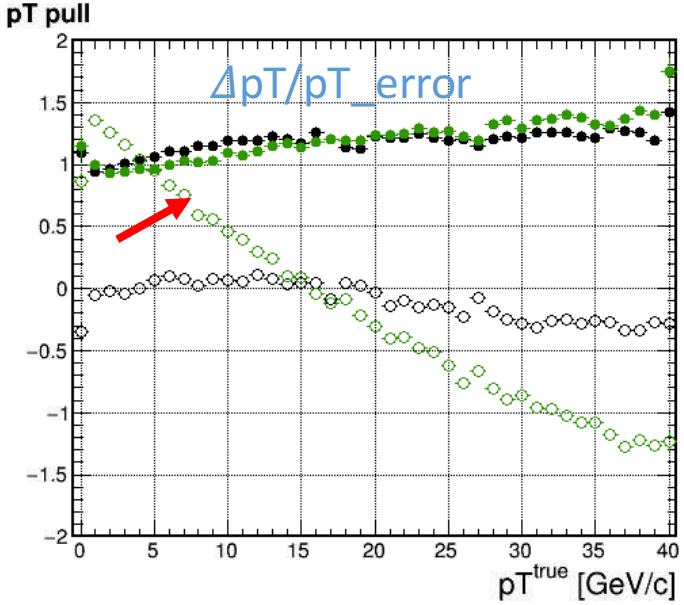
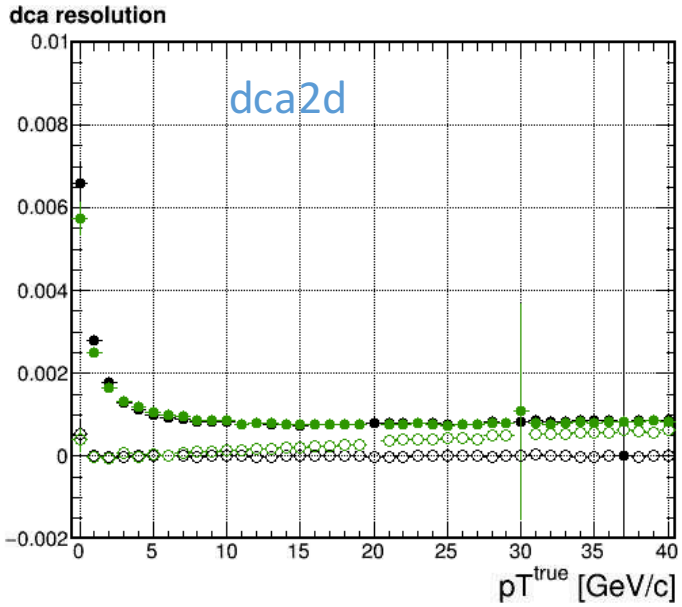
The problem:

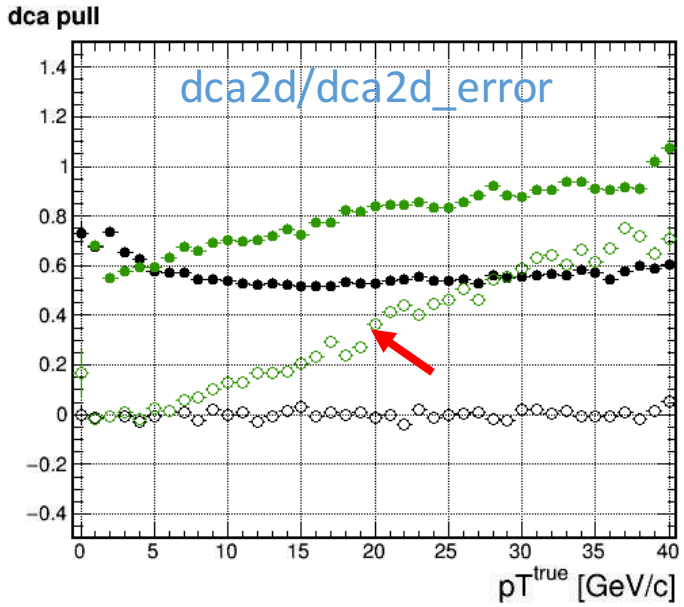
	sigma	mean
GenFit	Black dot	Black circle
Alan	Green dot	Green circle

*pT_error_Alan is now using pT_error_GenFit



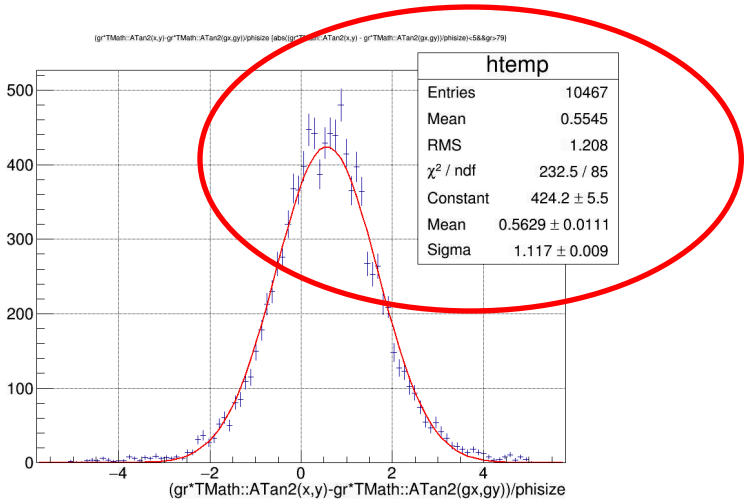




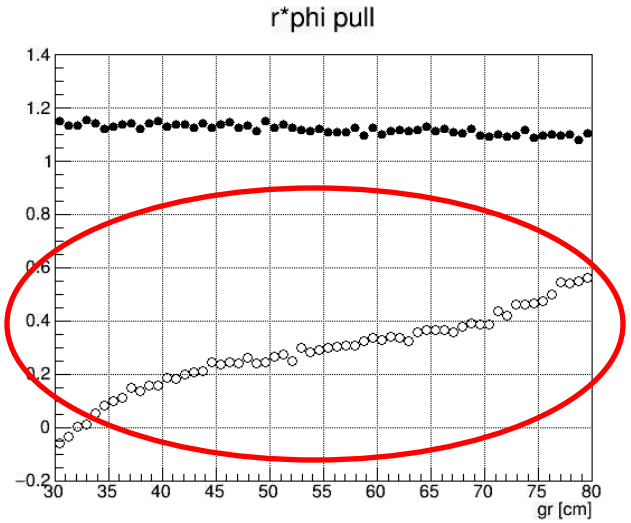


Suspecting the clustering may have some problem

r_geant * (phi_cluster - phi_geant) / phisize for TPC



r_geant * (phi_cluster - phi_geant) / phisize vs r_geant

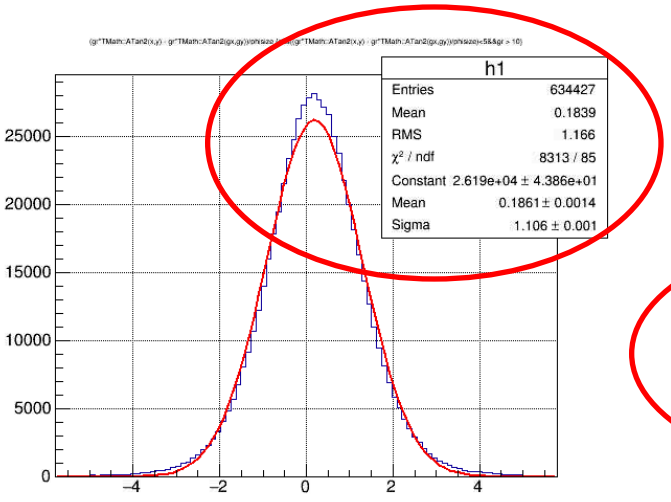


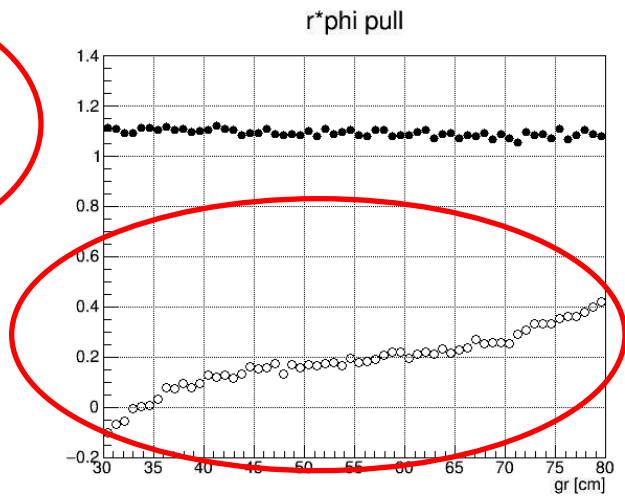
Using correct PHG4Hit position, Problem persists

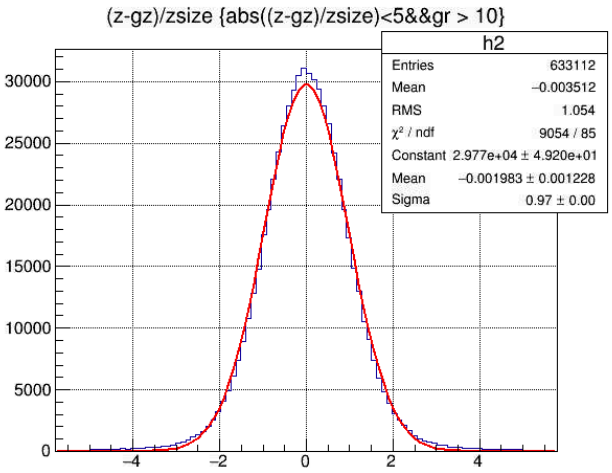
In several modules, PHG4Hit position used was only the incoming GEANT hit:

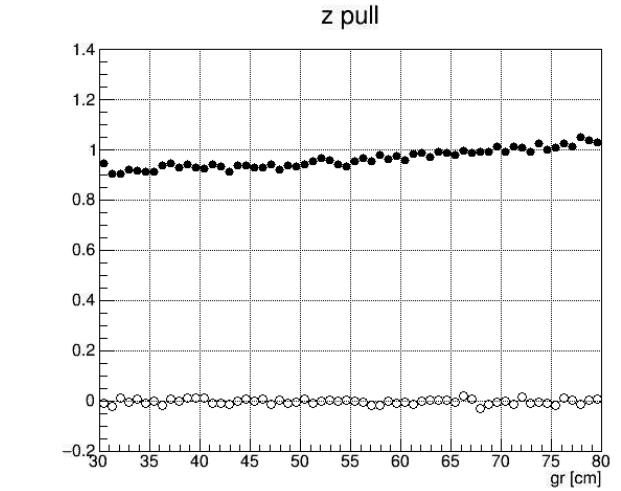
- PHG4CylinderCellTPCReco
- PHG4TPCClusterizer
- SvtxEvaluator

So I changed those modules to use the correct average PHG4Hit positions. However, SvtxCluster pull distribution doesn't get fixed completely.





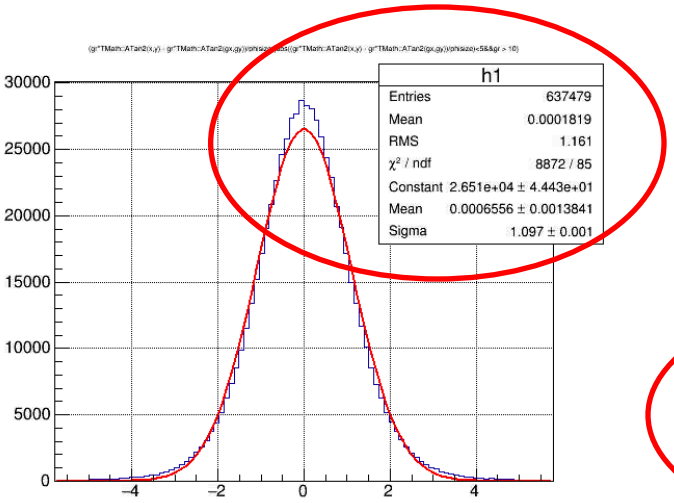


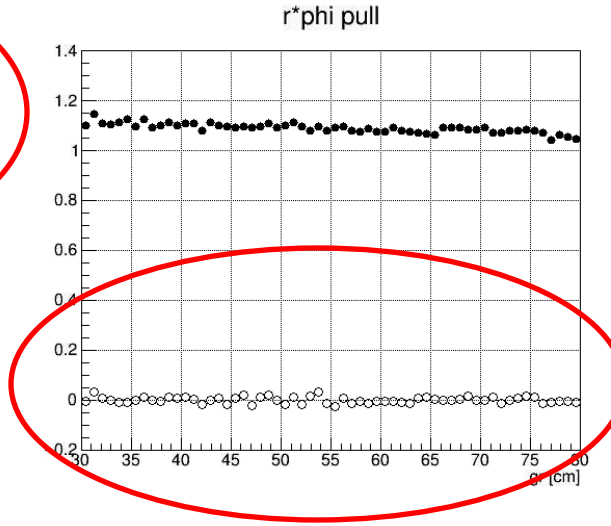


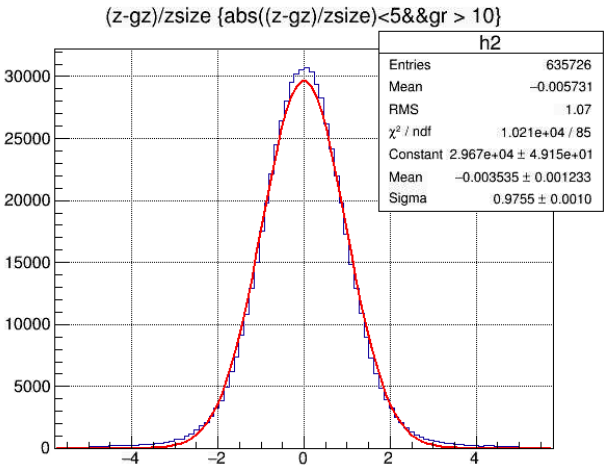
Correct PHG4Hit position, Disable TPC charge distortion, Fixed!

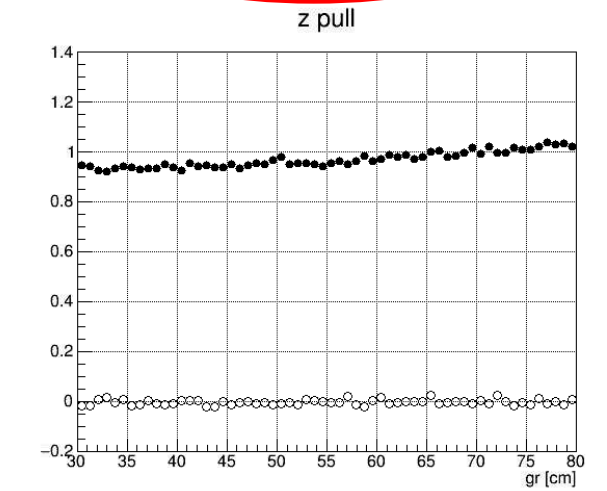
When I disabled the TPC charge distortion in the PHG4CylinderCellTPCReco, The cluster pull shift is gone, finally.

However ...



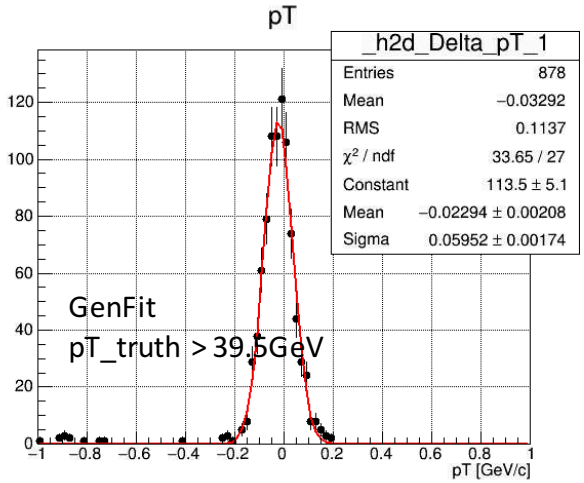


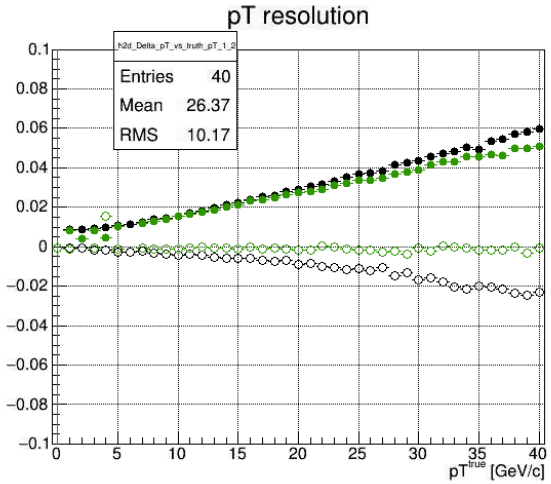


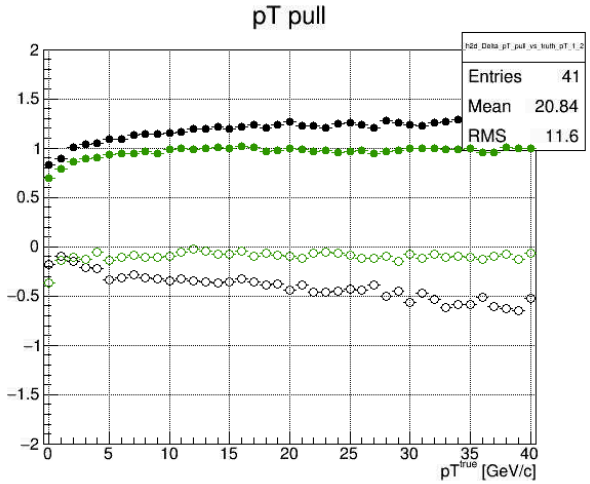


pT and dca pull distributions

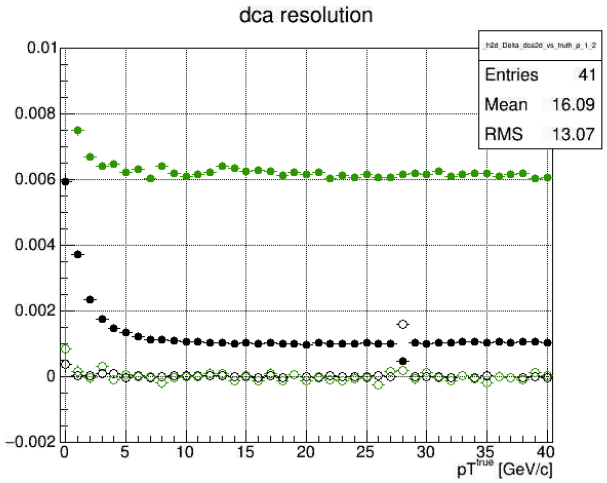
Black: GenFit refitting, based on SvtxClusters (no TPC distortion) and Alan's pattern recognition.
Green: GenFit truth tracking, based on smeared PHG4Hits and perfect pattern recognition.

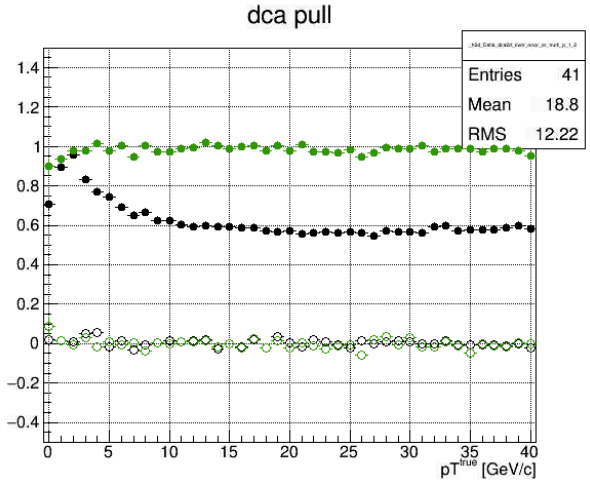






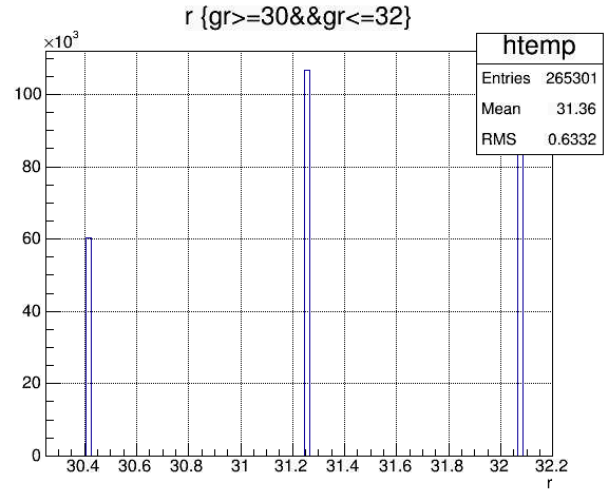
- The pT pull distribution is still shifted.
- Wondering this is related to that the pattern recognition part may have some bias.

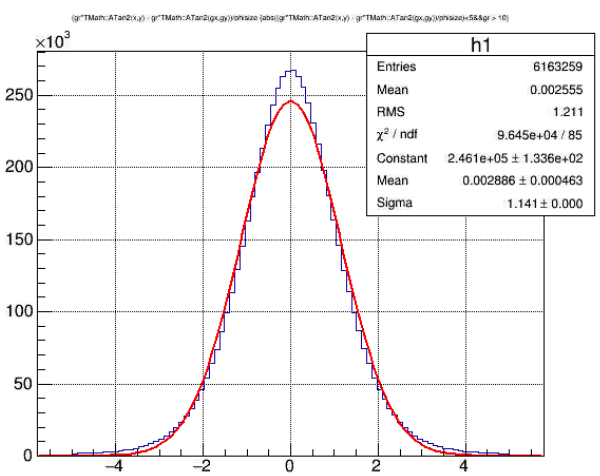


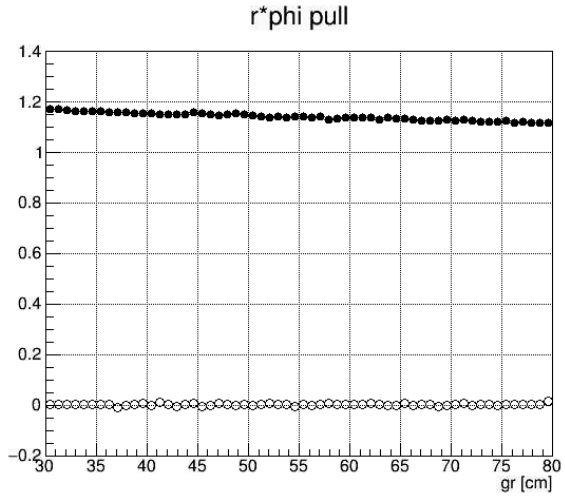


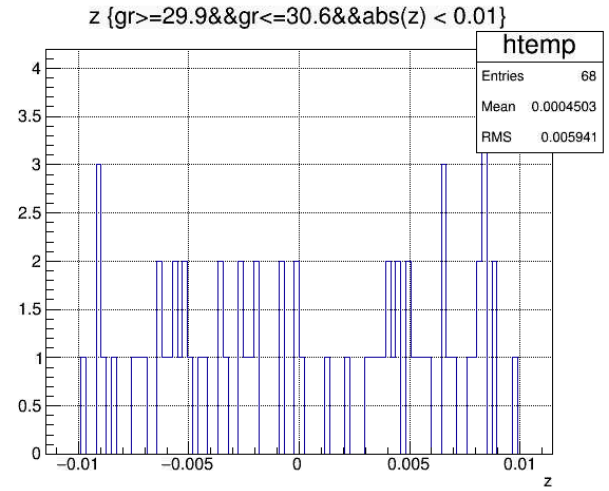
Backups:

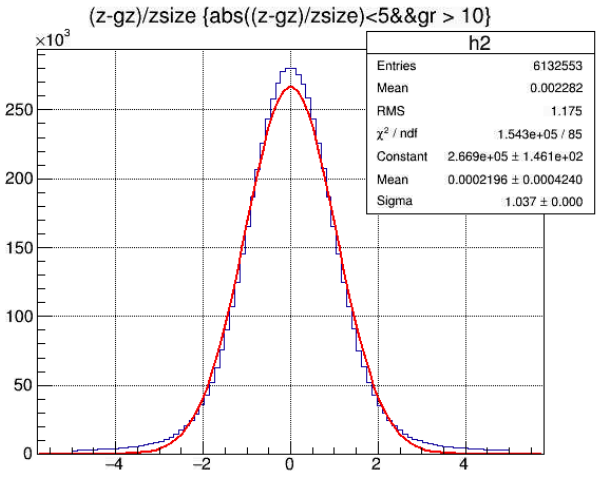
SvtxCluster pull, pT 0 - 40 GeV

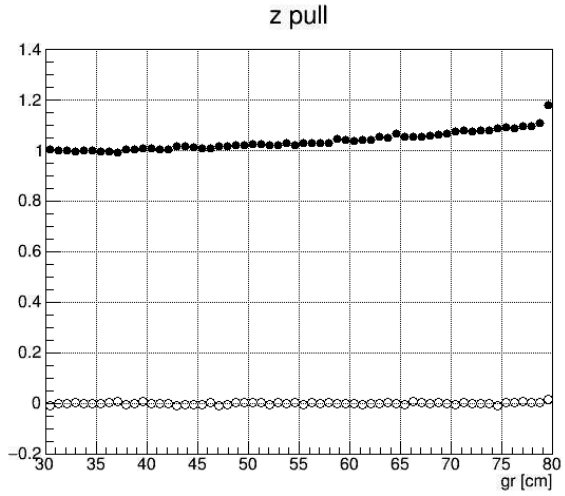












GenFit vs. Alan

Black: GenFit refitting, mean = -2.3e-2

Green: Alan, mean = -7.7e-2